

REMARKS

Reconsideration of the above-identified application in view of the present amendment is respectfully requested.

The Examiner's cooperation during the telephone interview of April 10, 2003 is greatly appreciated. The Drawings and Specification have been amended as discussed with the Examiner.

Claim 16 has been rejected as containing new matter. Claim 16 has been amended to overcome this rejection, as discussed with the Examiner. Claims 15 and 16 have been rejected as indefinite. Claims 15 and 16 have been amended to overcome these rejections, as discussed with the Examiner.

Claims 1, 2, and 10-13 have been rejected as anticipated by Frantom et al., US 4,655,312. Claim 14 and 16 have been rejected as unpatentable over Frantom et al. in view of Behr, US 5,558,370. Claims 3-9 have been allowed. Claim 15 has been indicated as containing allowable subject matter. Claim 15 has been amended as discussed with the Examiner and is in condition for allowance.

Amended claim 1 recites the electric motor and the spool generating a force in the seat belt webbing greater than a force required to only remove slack from the seat belt webbing (Specification, page 37, lines 1-13).

Frantom et al. discloses a seat belt retractor (14) for removing slack in a seat belt (10) under crash conditions before crash loads are applied to the seat belt (10) by the vehicle occupant (Col. 2, lines 22-30). The retractor (14)

ceases retracting the seat belt (10) (Col. 3, lines 40-48) when a predetermined load (I_m) is imparted to the seat belt (10) by the occupant. The predetermined load (I_m) is the same for both the slow speed operation and the high speed operation of the motor (42) (Col. 6, lines 55-64; Col. 7, lines 31-41). Thus, the retractor (14) of Frantom et al. stops retracting the seat belt (10) before the retractor (14) can pull the occupant of the vehicle seat backward toward a back portion of the vehicle seat.

Behr discloses a seat belt retractor (12) for removing slack in a seat belt under crash conditions before crash loads are applied to the seat belt by the vehicle occupant (Col. 4, lines 13-18). The retractor (12) ceases retracting the seat belt (Cols. 5-6, lines 59-67 & 1-15) when a predetermined load is imparted to the seat belt by the occupant. The predetermined load is the same for both the slow speed operation and the high speed operation of the motor (12) (Col. 5, lines 1-8). Thus, the retractor (12) of Frantom et al. stops retracting the seat belt before the retractor (12) can pull the occupant of the vehicle seat backward toward a back portion of the vehicle seat.

Additionally, a claim is anticipated only if each and every element as set forth in the claim is found in a single prior art reference. MPEP §2131. The identical invention must be shown in as complete detail as contained in the claim. MPEP §2131. Frantom et al. and Behr nowhere disclose a retractor pulling the occupant backward or putting the occupant under

any force. Every reference to the retractor in Frantom et al. and Behr only states that the retractor takes up slack.

Consequently, it is respectfully submitted that claim 1, as well as claims 2 and 10-14 which depend from claim 1, are in condition for allowance.

Amended claim 16 recites the electric motor and the spool generating a the second force in the seat belt webbing being greater than a force required to only remove slack from the seat belt webbing (Specification, page 37, lines 1-13).

Frantom et al. discloses a seat belt retractor (14) for removing slack in a seat belt (10) under crash conditions before crash loads are applied to the seat belt (10) by the vehicle occupant (Col. 2, lines 22-30). The retractor (14) ceases retracting the seat belt (10) (Col. 3, lines 40-48) when a predetermined load (I_m) is imparted to the seat belt (10) by the occupant. The predetermined load (I_m) is the same for both the slow speed operation and the high speed operation of the motor (42) (Col. 6, lines 55-64; Col. 7, lines 31-41). Thus, the retractor (14) of Frantom et al. stops retracting the seat belt (10) before the retractor (14) can pull the occupant of the vehicle seat backward toward a back portion of the vehicle seat.

Behr discloses a seat belt retractor (12) for removing slack in a seat belt under crash conditions before crash loads are applied to the seat belt by the vehicle occupant (Col. 4, lines 13-18). The retractor (12) ceases retracting the seat belt (Cols. 5-6, lines 59-67 & 1-15) when a predetermined load is imparted to the seat belt by the occupant. The

predetermined load is the same for both the slow speed operation and the high speed operation of the motor (12) (Col. 5, lines 1-8). Thus, the retractor (12) of Frantom et al. stops retracting the seat belt before the retractor (12) can pull the occupant of the vehicle seat backward toward a back portion of the vehicle seat.

Additionally, a claim is anticipated only if each and every element as set forth in the claim is found in a single prior art reference. MPEP §2131. The identical invention must be shown in as complete detail as contained in the claim. MPEP §2131. Frantom et al. and Behr nowhere disclose a retractor pulling the occupant backward or putting the occupant under any force. Every reference to the retractor in Frantom et al. and Behr only states that the retractor takes up slack.

Claim 16 is in condition for allowance.

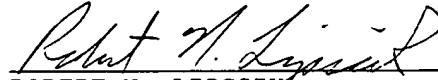
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

In view of the foregoing, allowance of the above-identified application is respectfully requested.

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Please charge any deficiency or credit any overpayment in
the fees for this amendment to our Deposit Account
No. 20-0090.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Page 28, lines 5-18, of the Specification has been amended, as follows:

--The vehicle occupant safety system 10 also includes a force detection device 176 for detecting a force applied to the seat belt webbing 20. Preferably, the force detection device 176 is a micro-electro mechanical (MEMS) strain sensitive transducer. As illustrated in Fig. 1, the force detection device 176 is located on the seat belt webbing 20 adjacent the anchor point 23. Those skilled in the art will recognize that the force detection device 176 may be located in other areas of the vehicle occupant safety system 10, ~~such as on the pretensioner 24.~~ The force detection device 176 detects the force applied to the seat belt webbing 20 and generates a signal indicative of the detected force.--

IN THE CLAIMS:

Please amend claims 1, 15, and 16, as follows:

1. (Amended) A vehicle occupant safety system for helping to protect an occupant of a vehicle seat during a crash condition, the system comprising:

at least one sensor for sensing a vehicle crash condition and generating a signal indicative of the crash condition;

seat belt webbing for extending around the vehicle occupant; and

a pretensioner responsive to the signal generated by the sensor for acting on the seat belt webbing to pull an occupant of the vehicle seat who is forward in the vehicle seat backward toward a back portion of the vehicle seat,

the pretensioner comprising a seat belt retractor, the seat belt retractor including a spool on which the seat belt webbing is wound and an electric motor for rotating the spool in a belt retraction direction to pull the occupant backward toward the back portion of the vehicle seat, the electric motor and the spool generating a force in the seat belt webbing greater than a force required to only remove slack from the seat belt webbing.

15. (Twice Amended) A vehicle occupant safety system for helping to protect an occupant of a vehicle seat during a crash condition, the system comprising:

at least one sensor for sensing a vehicle crash condition and generating a signal indicative of the crash condition;

seat belt webbing for extending around the vehicle occupant;

a pretensioner responsive to the signal generated by the sensor for acting on the seat belt webbing to pull an occupant of the vehicle seat who is forward in the vehicle seat backward toward a back portion of the vehicle seat; and

the pretensioner comprising a gear assembly for transmitting power from an electric motor to a spool on which the seat belt webbing is wound, rotation of the electric motor causing wobbling of a part of the gear assembly, wobbling of the a part of the gear assembly causing rotation of the spool in a belt retraction direction.

16. (Amended) A vehicle occupant safety system for helping to protect an occupant of a vehicle seat during a crash condition, the system comprising:

a first sensor for sensing a vehicle crash condition and generating a first signal indicative of the crash condition;

a second sensor for sensing a vehicle impending crash condition and generating a second signal indicative of the pre-crash condition;

seat belt webbing for extending around the vehicle occupant; and

a pretensioner responsive to the first signal and the second signal for acting on the seat belt webbing to pull an occupant of the vehicle seat who is forward in the vehicle seat backward toward a back portion of the vehicle seat,

the pretensioner comprising a seat belt retractor, the seat belt retractor including a spool on which the seat belt webbing is wound and an electric motor for rotating the spool in a belt retraction direction to pull the occupant backward toward the back portion of the vehicle seat,

the electric motor having a first mode of operation, a second mode of operation, and a third mode of operation,

the first mode of operation occurring in an absence of the first signal from the first sensor or the second signal from the second sensor, in the first mode of operation the electric motor rotates the spool in the belt retraction direction and in a belt withdrawal direction, opposite the belt retraction direction;

the second mode of operation occurring upon receipt of the first signal from the first sensor, in the second mode of operation the electric motor rotates the spool in the belt retraction direction initiating a first force to pull the occupant backward toward the back portion of the vehicle seat,

the third mode of operation occurring upon receipt of the second signal from the second sensor, in the third mode of operation the electric motor rotates the spool in the belt retraction direction thereby initiating a second force to pull the occupant backward toward the back portion of the vehicle seat, the second force being less ~~greater~~ than the first force, the second force in the seat belt webbing being greater than a force required to only remove slack from the seat belt webbing.